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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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21912	7590	05/18/2005	EXAMINER	
VAN PELT, YI & JAMES LLP 10050 N. FOOTHILL BLVD #200 CUPERTINO, CA 95014			GRIER, LAURA A	
			ART UNIT	PAPER NUMBER
			2644	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/773,568	Applicant(s) DAVIS ET AL.	
	Examiner Laura A. Grier	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/2/04</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. **Claims 16-18** are rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1-3 of prior U.S. Patent No. 6175631. This is a double patenting rejection.

Regarding claim 16, U. S. Patent No. 6175631 (herein, USPN631), claim 1 discloses filtering the mono input signal using a band pass filter, which reads on filtering the mono input signal using a band pass filter; filtering the mono input signal using a high pass filter, which reads on filtering the mono input signal using a high pass filter; filtering the mono input signal using a low pass filter, which reads on filtering the mono input signal using a low pass filter; decorrelating the low pass filter output signal and the high pass filter output signal, which reads on a decorrelating the low pass filter output signal and the high pass filter output signal; and combining each of the decorrelated signals with the band pass filter output signal, which reads on combining each of the decorrelated signals with the band pass filter output signal.

Regarding claim 17, USPN631, claim 2 discloses, the low pass filter output signal and high pass signal output signal are combined before the low pass filter output signal and high pass

filter output signal are decorrelated, which reads on the low pass filter output signal and high pass signal output signal are combined before the low pass filter output signal and high pass filter output signal are decorrelated.

Regarding claim 18, USPN631, claim 3 discloses wherein the vocal range of frequencies extends from approximately 300 Hz to approximately 3 kHz, which reads on wherein the vocal range of frequencies extends from approximately 300 Hz to approximately 3 kHz.

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. **Claims 1-4, 7-15, and 19-22** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4-8 of U.S. Patent No. 6175631. Although the conflicting claims are not identical, they are not patentably distinct from each other because each is drawn to filtering and decorrelating rear surround signal.

Regarding claim 1, U. S. Patent No. 6175631 (herein, USPN631), claim 4 discloses phase shifting the left rear surround input and a right rear surround input signal by a 1st and 2nd phase shift, respectively and transforming the phase shifted left and right rear surround sound input, respectively using an HRTF to render the left and right surround input signal at respectively left

rear and right rear virtual speaker locations, which reads on phase shifting and transforming for the left and right rear surround input signal, respectively, therein as claimed.

Regarding claim 2, USPN631, claim 4 discloses determining the extent that the left rear surround input signal and the right rear surround input signal are the same, which reads on the left rear surround input signal and the right rear surround input signal are substantially the same signal.

Regarding claim 3, USPN631, claim 4 discloses wherein the phase shifting of left and right rear surround input signal is accomplished by the passing the left and right rear surround input signal, respectively, through a 1st and 2nd allpass filter, which reads on the claimed limitation.

Regarding claim 4, USPN631, claim 4 discloses the 1st allpass filter implemented using a 1st delay line and a 1st feedback loop and the 2nd allpass filter implemented using a 2nd delay line and a 2nd feedback loop, which reads on the 1st allpass filter and the 2nd allpass filter are each implemented using a delay line and a feedback loop.

Regarding claim 7, USPN631, claim 4 discloses determining the extent that the left rear surround input signal and the right rear surround input signal are the same, which reads on the 2nd phase shift is complementary to the 1st phase shift.

Regarding claim 8, USPN631, claim 4 discloses determining the extent that the left rear surround input signal and the right rear surround input signal are the same and adjusting the magnitude of the 1st and 2nd phase shift according to the extent that the left and right rear surround input signal are the same, which reads on determining the extent that the left rear surround input signal and the right rear surround input signal are the same and adjusting the

magnitude of the 1st and 2nd phase shift according to the extent that the left and right rear surround input signal are the same.

Regarding claim 9, USPN631, claim 4 discloses the phase shifting of left and right rear surround input signal is accomplished by the passing the left and right rear surround input signal, respectively, through a 1st and 2nd allpass filter, and the 1st allpass filter implemented using a 1st delay line and a 1st feedback loop and the 2nd allpass filter implemented using a 2nd delay line and a 2nd feedback loop, with respective each feedback loop having a 1st and 2nd gain, adjusting the magnitude of the 1st and 2nd phase shift by adjusting the gain, which reads on the claimed limitations.

Regarding claim 10, USPN631, claim 5 discloses phase shifting the 1st and 2nd input signal by a 1st and 2nd phase shift, respectively; and the 1st and 2nd signal are decorrelated in a manner that does not distort either the 1st or 2nd input signal, therein, which reads on the claimed limitations.

Regarding claim 11, USPN631, claim 5 discloses phase shifting of the 1st and 2nd input signal is accomplished by the passing respectively, through a 1st and 2nd allpass filter, which reads on the claimed limitation.

Regarding claim 12, USPN631, claim 5 discloses the 1st allpass filter implemented using a 1st delay line and a 1st feedback loop and the 2nd allpass filter implemented using a 2nd delay line and a 2nd feedback loop, each with a feedback loop, which reads on the 1st allpass filter and the 2nd allpass filter are each implemented using a delay line and a feedback loop.

Regarding claim 13, USPN631, claim 5 discloses determining the 1st and 2nd input signal are the same in respect to the setting the magnitude of the 1st and 2nd phase shift, therein, which reads on the 2nd phase shift is complementary to the 1st phase shift.

Regarding claim 14, USPN631, claim 5 discloses determining the extent the 1st and 2nd input signal are the same in respect to the setting the magnitude of the 1st and 2nd phase shift, therein, which reads on the claimed limitations.

Regarding claim 15, USPN631, claim 5 discloses the phase shifting of the 1st and 2nd input signal is accomplished by the passing the left and right rear surround input signal, respectively, through a 1st and 2nd allpass filter, and the 1st allpass filter implemented using a 1st delay line and a 1st feedback loop and the 2nd allpass filter implemented using a 2nd delay line and a 2nd feedback loop, with respective each feedback loop having a 1st and 2nd gain, adjusting the magnitude of the 1st and 2nd phase shift by adjusting the gain, which reads on the claimed limitations.

Regarding claim 19 USPN631, claim 6 discloses a 1st and 2nd allpass filter, respectively, configured to phase shift the 1st and 2nd input signal, and a mono detection circuit, which reads on the 1st and 2nd allpass filter and a mono detection circuit.

Regarding claim 20 USPN631, claim 6 discloses wherein the 1st and 2nd phase shift are increased as the similarity of the left and right rear surround input signal increases, which reads on the claimed limitation.

Regarding claim 21 USPN631, claim 7 discloses wherein the 2nd phase shift is complementary to the 1st phase shift, which reads on wherein the 2nd phase shift is complementary to the 1st phase shift.

Regarding claim 22 USPN631, claim 8 discloses wherein the 1st input signal is a left rear surround signal and wherein the 2nd input signal is right rear surround signal, which reads on discloses wherein the 1st input signal is a left rear surround signal and wherein the 2nd input signal is right rear surround signal.

5. **Claims 19 and 22** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6714652. Although the conflicting claims are not identical, they are not patentably distinct from each other because each is drawn to filtering and decorrelating rear surround signal.

Regarding claim 19, U.S. Patent No. 6714652, (herein, USPN652), claim 1 discloses a 1st and 2nd allpass filter, respectively, configured to phase shift the 1st and 2nd input signal, and a mono detection circuit, which reads on the 1st and 2nd allpass filter and a mono detection circuit.

Regarding claim 22, USPN652, claim 1 discloses wherein the 1st input signal is a left rear surround signal and wherein the 2nd input signal is right rear surround signal, which reads on discloses wherein the 1st input signal is a left rear surround signal and wherein the 2nd input signal is right rear surround signal.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1-2 and 10** are rejected under 35 U.S.C. 102(e) as being anticipated by Wood et al., U. S. Patent No. 6009179.

Regarding claim 1, Wood et al. (herein, Wood) discloses a method and apparatus for electronically embedding directional cues in two channels of sound. Wood's disclosure comprises phase shifting of a left and right rear surround input signal, and transforming the phase shifted left and right rear surround input signal, respective with HRTFs in figure 3 and col. 7, lines 5-55 and col. 10, lines 43-68.

Regarding claim 2, Wood discloses everything claimed as applied above (see claim 1). Wood further disclose the left and right rear surround input signal as substantially the same signal (figure 3).

Regarding claim 10, Wood discloses a method and apparatus for electronically embedding directional cues in two channels of sound. Wood's disclosure comprises phase shifting of a 1st and 2nd input signal, and decorrelated respectively, which reads on the claimed limitations, therein - figure 3 and col. 7, lines 5-55 and col. 10, lines 43-68.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. **Claims 3-4 and 11-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood in view of Van Duyne, U. S. Patent No. 5748513.

Regarding claim 3-4 and 11-12, Wood discloses everything claimed as applied above (see claim 1 and 10, respectively). However, Wood fails to disclose the phase shifters as allpass filters that are implemented with a delay line and feedback loop.

Regarding the phase shifters as allpass filters, in a similar field of endeavor, Van Duyne discloses a digital filter in figure 2 having a delay line (20), gain (22) and allpass filter part (24).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood by implementing an allpass filter for the purpose of convenience and producing precise phase shifts.

9. **Claims 5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood.

Regarding claims 5 and 9, Wood discloses everything claimed as applied above (see claim 1). However, Wood fails to disclose the left and right rear surround input signals output from a Pro Logic system or an AC-3 system. The examiner takes official notice that Pro Logic and AC-3 systems are well known in the art. Thus, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood by implementing the surround signal output by either a Pro Logic or an AC-3 system for purpose of outputting the signals via commonly used multi-channel reproduction methods.

10. **Claims 7 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood in view of Iida et al., U. S. Patent No. 5761315.

Regarding claim 7 and 13, Wood discloses everything claimed as applied above (see claim 1 and 10, respectively). However, Wood fails to disclose the 1st and 2nd phase shift complementary to each other.

Regarding the 1st and 2nd phase shift being complementary to each other, in a similar field of endeavor, Iida et al., (herein, Iida) discloses a surround sound processing apparatus. Iida disclosure comprises a phase shifter (figure 17 – reference 11 – col. 21, lines 7-21), wherein the left and right rear signals are producing having opposite phases.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood by implementing the phase shifting technique of Iida with Wood by substituting one of the phase shifters of Wood with an opposite phase shifter for the purpose of the simplifying the arrangement to make it desirable.

11. Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood in view Yumoto et al., (herein, Yumoto) U. S. Patent No. 5414774.

Regarding claim 8 and 14, Wood discloses everything claimed as applied above (see claim 1 and 10, respectively). However, Wood fails to disclose determining whether the left and right surround sound signals are the same and adjusting the phase shifters according to this determination.

Yumoto discloses a circuit for controlling an audio system comprising a stereo detector (62), a control circuit (64), and repercussion sound circuit (24). The repercussion circuit is disclosed as a surround sound circuit (col. 1, line 37), wherein, when the circuit receives a signal (mono), which is not intended to process there exists a negative attribute, in the case, noise. Accordingly, Yumoto discloses that the detector (62) and the control circuit (64) can control the

surround sound circuit (24) in response to the typed of audio signal received, either mono or stereo, by disabling it (for example, adjusting the magnitude of the phase shifters (38) to zero – (col. 3, lines 15-31).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood by implementing the detection and control circuits of Yumoto for the purpose of avoiding a negative effect of the processing a stereo signal.

12. Claims 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood in view Van Duyne and further in Yumoto.

Regarding claim 19 and 22, Wood discloses phase shifters (300 and 305). However, Wood fails to discloses the phase shifters as allpass filters.

Regarding the phase shifters as allpass filters, in a similar field of endeavor, Van Duyne discloses a digital filter in figure 2 including an allpass filter part (24).

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood by implementing an allpass filter for the purpose convenience and producing precise phase shifts. Further, Wood and Van Duyne fails to discloses a mono detection circuit.

Yumoto discloses a detection circuit (62). And, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood and Van Duyne by implementing the detection of Yumoto for the purpose of avoiding a negative effect of the processing a stereo signal.

13. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over by Wood in view Van Duyne and further in Yumoto (herein, Wood Combination).

Regarding claim 21, Wood combination discloses everything claimed as applied above (see claim 19). Wood combination fails to disclose the 1st and 2nd phase shift complementary to each other.

Regarding the 1st and 2nd phase shift being complementary to each other, in a similar field of endeavor, Iida et al., (herein, Iida) discloses a surround sound processing apparatus. Iida disclosure comprises a phase shifter (figure 17 – reference 11 – col. 21, lines 7-21), wherein the left and right rear signals are producing having opposite phases.

It would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Wood combination by implementing the phase shifting technique of Iida with Wood combination (Wood) by substituting one of the phase shifters of Wood with an opposite phase shifter for the purpose of the simplifying the arrangement to make it desirable.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura A. Grier whose telephone number is (571) 272-7518. The examiner can normally be reached on Monday - Friday, 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N. Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Laura A. Grier
May 16, 2005